



Cardamine gouldii (Brassicaceae), a New Species from Bhutan

Ihsan A. Al-Shehbaz

Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

ABSTRACT. The new species *Cardamine gouldii* is described and illustrated from Bhutan. Its distinguishing characters and relationship to the closely related Himalayan *C. violacea* and *C. nepalensis* are discussed. This last species is reported for the first time from Sikkim.

Key words: Bhutan, *Cardamine*, Sikkim.

During my visit in 1998 to the Royal Botanic Gardens, Kew, a few collections of undescribed taxa of Brassicaceae were pulled out for loan and further study. One of these was recently described in the new genus *Baimashania* (Al-Shehbaz, 2000), and a second is described herein as *Cardamine gouldii*.

Cardamine gouldii Al-Shehbaz, sp. nov. **TYPE:** Bhutan. [Bumthang District], Yatong La to Gyesta, 9800–11700 ft., 7 May 1938, *B. J. Gould 415* (holotype, K). Figure 1.

Herba perennis, caulibus striatis, pilosis. Folia caulina superiora 3–5-foliolata, petiolibus 1–3 cm longis, nonauriculatis; foliola terminalia oblonga vel oblongo-lanceolata, 2.5–5 × 0.7–2 cm, sparse hirsuta, integra, ciliolata, mucronulata; foliola lateralia oblonga, sessilia. Racemi 5–10-flori. Pedicelli floriferi recurvati, 5–10 mm longi. Sepala oblonga, 5–7 × 2–3 mm, sparse pilosa, saccata. Petala alba, oblonga, 12–15 × 4–6 mm. Filamenta mediana 8–10 mm longa, filamenta lateralia 6–7 mm longa; anthera oblonga, ca. 1.5 mm longa. Fructus et semina ignota.

Perennial herbs. Underground parts, basal leaves, and lowermost portions of stem unknown. Stems striate, sparsely pilose with trichomes to 0.6 mm long; distal nodes 5–11 cm apart. Middle leaves 5-foliolate; uppermost trifoliolate; petiole 1–3 cm long, narrowly winged, base not auriculate; terminal leaflet oblong to oblong-lanceolate, 2.5–5

× 0.7–2 cm, sparsely hirsute with trichomes to 0.6 mm long, subsessile or cuneate basally into a petiolule to 5 mm long, margin entire to repand, ciliolate with trichomes to 0.1 mm long, lateral veins ending in mucronulate callosities to 0.2 mm long, apex rounded to obtuse; lateral leaflets oblong, sessile, similar to and smaller than terminal leaflet. Racemes lax, 5- to 10-flowered. Flowering pedicels slender, recurved, 5–10 mm long. Sepals drying lavender, oblong, 5–7 × 2–3 mm, sparsely pilose, base saccate. Petals white, oblong, 12–15 × 4–6 mm, apex rounded; claw ca. 1.5 mm long. Stamens erect; filaments of median pairs 8–10 mm long, those of lateral pair 6–7 mm; anthers oblong, ca. 1.5 mm long. Fruit and seeds unknown.

Cardamine gouldii, which is known thus far only from the type collection and is named after the collector of the holotype, B. J. Gould, is most closely related to *C. violacea* (D. Don) Wallich ex J. D. Hooker & Thomson (Bhutan, Nepal, Sikkim) and *C. nepalensis* Kurosaki & H. Ohba. The last species was known previously from three Nepalese collections (Kurosaki & Ohba, 1989) and is reported herein for the first time from Sikkim. This record is based on *Cooper 348* (E). All three species are robust plants with pendulous flowers, petals more than 1 cm long, and saccate sepals.

Cardamine gouldii is easily distinguished by having white, oblong petals, non-auriculate petioles, and 3- to 5-foliolate compound leaves with entire to repand leaflets rounded to obtuse at apex. By contrast, *C. violacea* has purple, obovate to spatulate petals and sessile, simple leaves with a strongly sagittate base, dentate to denticulate margin, and acuminate to caudate apex. *Cardamine nepalensis* has purple, obovate petals, mi-

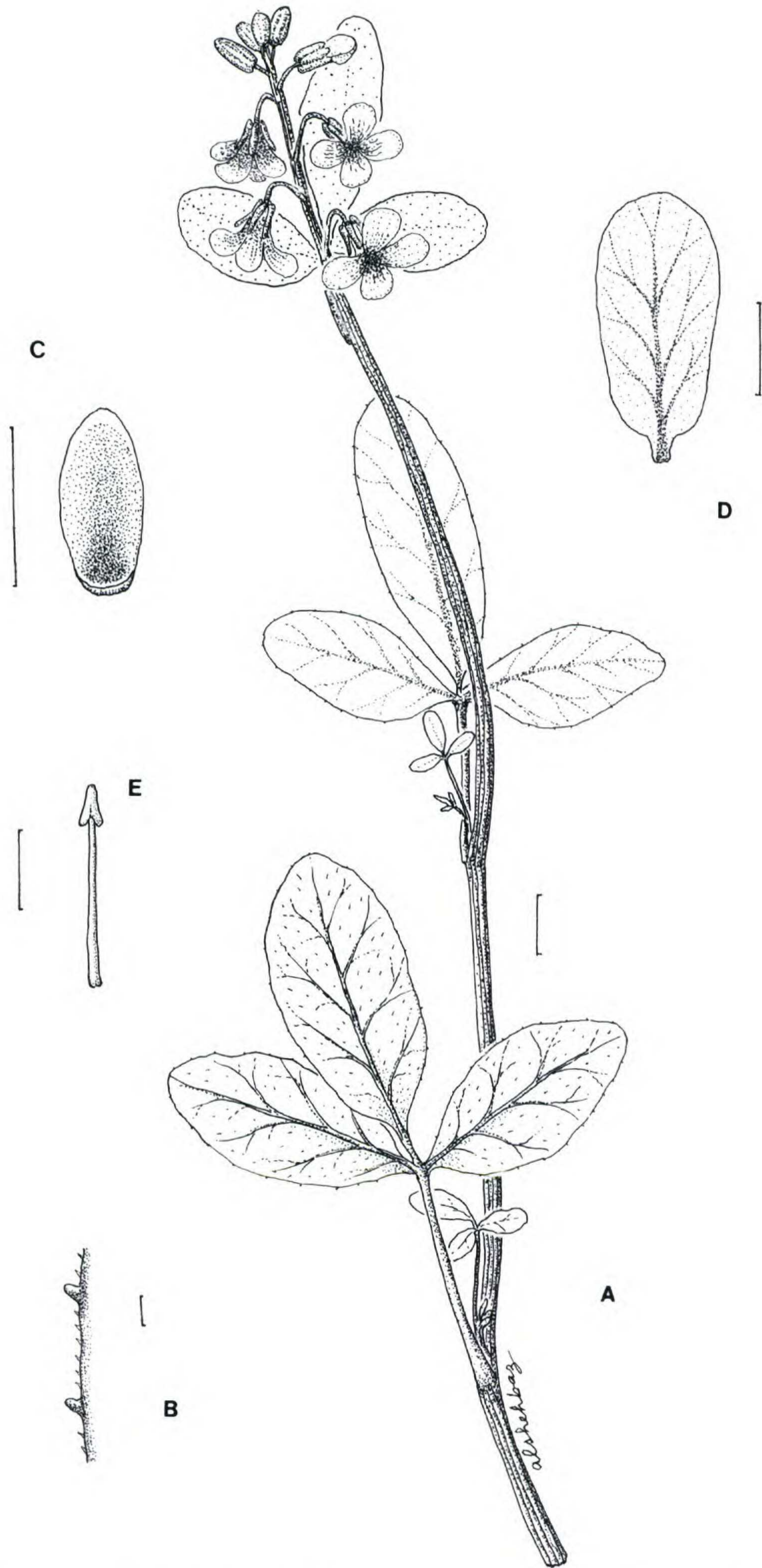


Figure 1. *Cardamine gouldii* Al-Shehbaz. —A. Uppermost portion of plant. —B. Portion of leaf margin showing two callosities and minute trichomes. —C. Sepal. —D. Petal. —E. Median stamen. Scale: A = 1 cm; B = 0.2 mm; C–E = 5 mm. Drawn by Al-Shehbaz from the holotype (*Gould 415*).

nutely auriculate petioles, and pinnatisect leaves with dentate to denticulate margin and acuminate terminal lobe and decurrent lateral lobes. The uppermost leaves in *C. nepalensis* are sometimes simple.

Although the lowermost portions of the plant are missing in the three segments of the holotype of *Cardamine gouldii*, the species is described herein as perennial and is inferred as similar to the native, large-flowered (petals 10–17 mm) Himalayan species of *Cardamine*. All of the annual species of *Cardamine* known to grow in the Himalayas are natu-

ralized, small-flowered weeds with petals rarely up to 5 mm long.

Acknowledgments. I am most grateful to Sue Zmarzty and Gillian Challen for their help during my visit to K in 1998 and to Mark Watson (E) for advice about the type locality.

Literature Cited

- Al-Shehbaz, I. A. 2000. *Baimashania* (Brassicaceae), a new genus from China. *Novon* 10: 320–322.
Kurosaki, N. & H. Ohba. 1989. *Cardamine nepalensis*, a new species from Nepal Himalaya (Cruciferae). *J. Jap. Bot.* 64: 135–138.